

List all the possible integer roots. Then use them to find the roots of the following polynomial functions.

|                                       |  |
|---------------------------------------|--|
| 1. $f(x) = x^3 - 8x^2 - 23x + 30$     | 2. $f(x) = x^4 + 2x^3 - 7x^2 - 8x + 12$        |
| 3. $f(x) = x^3 - 7x^2 + 2x + 40$      | 4. $f(x) = x^3 - 2x^2 - x + 2$                 |
| 5. $f(x) = x^4 + x^3 + x^2 - 9x - 10$ | 6. $f(x) = x^5 - x^4 - 7x^3 + 11x^2 - 8x + 12$ |

**Directions:** Choose the correct response for each question.

1) The following polynomial has how many roots:  $P(x) = 2x^4 - 3x^2 + x - 1$

- A) 2                      B) 3                      C) 4                      D) 5

2) List the possible integer roots for:  $P(x) = x^3 + 2x^2 - 5x - 6$

- A)  $\pm 2, 3, 6$                       B)  $\pm 1, 2, 6$                       C)  $\pm 1, 2, 3, 6$                       D)  $\pm 1, 6$

3) List the possible rational roots for:  $P(x) = 2x^2 - x - 3$

- A)  $\pm 1, 3$                       B)  $\pm \frac{1}{2}, 1, \frac{3}{2}, 3$                       C)  $\pm \frac{2}{3}, 3$                       D)  $\pm 1, \frac{2}{3}, 3$

4) List the possible rational roots for:  $P(x) = 3x^2 + 19x + 6$

- A)  $\pm \frac{1}{3}, \frac{2}{3}, 1, 2, 3, 6$                       B)  $\pm 1, 2, 3, 6$                       C)  $\pm \frac{1}{3}, \frac{2}{3}$                       D)  $\pm \frac{1}{3}, 6$

5) Find the roots of:  $P(x) = 2x^3 + 5x^2 - 4x - 3$

- A)  $x = \{-1, \frac{1}{2}, 3\}$                       B)  $x = \{1, 3\}$                       C)  $x = \{-1, \frac{1}{2}\}$                       D)  $x = \{-3, -\frac{1}{2}, 1\}$